Natural Resource Inventory of the Androscoggin Riverlands

Turner and Leeds, Maine

Emergent marsh along the Androscoggin River, Leeds

Prepared by
Andy Cutko & Andy McLeod
Maine Natural Areas Program
for the
Bureau of Parks and Lands

January 2009

Natural Resource Inventory of the Androscoggin Riverlands Turner and Leeds, Maine

Preface

This Natural Resource Inventory (NRI) was conducted for the Bureau of Parks and Lands (BPL) by the Maine Natural Areas Program (MNAP) as part of the Bureau's management plan development process for the Androscoggin Riverlands. No previous NRIs have been completed for this unit.

The primary purpose of this NRI is to identify and describe important natural resources that should be considered in drafting the Bureau's management plan for the unit. Limited previous fieldwork had been completed by MNAP staff on these lands in 1997. An additional three days of fieldwork were completed in the summer of 2008. In all cases, fieldwork was preceded by landscape analysis performed using relevant GIS layers, aerial photos, and consultation with BPL staff.

Acknowledgements

The Bureau of Parks and Lands provided funding to the Maine Natural Areas Program for this Natural Resource Inventory. Cindy Bastey, formerly of BPL, provided historical land use information on the parcels, and Tom Charles supplied timber type information from the former owners. Joe Wiley contributed to the wildlife section. Meghan Sine and Andy McLeod (MNAP) did much of the mapping for this report, and Andy McLeod assisted with the field work and development of the report.

Regional Overview

The Androscoggin Riverlands are part of Maine's Central Interior biophysical region. This ~3 million acre region is characterized by flat to gently rolling topography with elevations ranging from 200 to 400 feet above sea level. Bedrock includes a large area of granite and alternating bands of sedimentary and volcanic rock oriented northeast to southwest.

The climate in this region is generally more moderate than other interior regions with an average high of 80°F in July and an average low of 10°F in January and about 150 frost free days. Precipitation averages 42" a year and snowfall averages 80".

The vegetation of this region reflects its comparatively moderate climate. Among the forest ecosystems, this region reflects a transition from a northern Appalachian forest of oak, pine, and mixed hardwoods in southern Maine to a spruce-fir-northern hardwood forest in northern and eastern Maine (McMahon 1993)

Property Description

Just north of Lewiston-Auburn, the 2,800 acre Androscoggin Riverlands parcels lie within 35 miles of roughly 50% of Maine's population. The Riverlands are separated into two units (Map 1). The smaller, northern section lies on the east shore of the Androscoggin River in Leeds. It is dissected partially by a power-line right of way and is accessible by boat or recreational trails. It features low-lying river bank wetlands along more than two miles of shoreline and young to mid-aged mixed forests, many of which grew up decades ago on abandoned farmlands. The terrain is relatively flat with little elevation gain as one leaves the river's edge.

The larger, southern section stretches for more than four and a half miles on the west shore of the River in Turner. It features more diverse topography, with elevations ranging from 260 feet along the River to knolls over 550 feet. This parcel is accessible by boat or recreational trail. There is a large parking lot/trailhead at the northern end, off Center Bridge Rd and a small trailhead at the southern end, off Conant Road. Low, rolling hills in the south give way to a more rugged landscape in the north. Small, isolated wetlands and larger connected ones are scattered throughout the unit and linked by small streams. Other notable features include mapped Deer Wintering Areas and Wading Bird and Waterfowl Habitat.

The Riverlands are laced with miles of recreational trails, affording ample opportunities for both motorized and non-motorized recreation.

Geology and Soils

The bedrock geology of this parcel is fairly simple compared to most of Maine. It is largely an acidic granite intrusion, part of the Mapleton Formation which formed in the Devonian Period, about 400 million years ago (Map 2). The eastern third of the lower unit features a lobe of the Sangerville formation which came to be during the Silurian Period (about 430 million years ago). The Sangerville formation is a moderately calcareous sedimentary/metasedimentary rock which provides the base for the rich, limey soils that allow some rare plants to grow in this parcel. There are a few exposed cliff faces and hilltops but otherwise very little exposed bedrock.

While much of the surficial geology in Maine is highly influenced by melting and receding glaciers, there are pockets of surficial material influenced by more recent activity. According to the Surficial Geology Map of Maine (Maine Geologic Survey 1985*)* the northern half of the Leeds unit contains eolian (wind-blown) and stream alluvium deposits. The southern part of the Leeds unit features the more common fine-grained glaciomarine deposits and unsorted glacial till. The Turner unit is largely glacial till with some small lobes of fine-grained glaciomarine deposits at the southern end and near the northern end (Map 3). At least one house-sized glacial erratic was seen along an ATV trail during fieldwork.

The soils in the Androscoggin Riverlands closely follow their underlying geologic formations and deposits. The Leeds unit is dominated by Adams and Ningret soil series. The Adams series consists of very deep, excessively and somewhat excessively drained soils formed in glacial-fluvial or glacio-lacustrine sand. These soils occur on outwash plains, deltas, lake plains, moraines, terraces, and eskers. The Ninigret series consists of very deep, moderately well drained soils formed over sandy and gravelly glacial outwash.

The Turner unit has three major soils series; Adams (as described above), Charlton and Hollis. The Hollis series consists of shallow, well drained and somewhat excessively drained soils formed in a thin mantle of till derived mainly from gneiss, schist, and granite. The Charlton series consists of very deep, well drained loamy soils formed in till. They are nearly level to very steep soils on till plains and hills.[1]

Hydrology and Water Quality

While there are no significant ponds or lakes enclosed within the boundaries of the Androscoggin Riverlands, the entire property borders the Androscoggin River. The third largest river in Maine, the Androscoggin begins in the Rangeley Lakes region and descends 1,500 vertical feet to Merrymeeting Bay, draining a watershed of approximately 3,450 square miles. The River has a long history of commercial and industrial use, most notably associated with the pulp and paper industries located upstream in Jay and Rumford.

[1] USDA NRCS, 2008.

The Androscoggin Riverlands abut an area known as Gulf Island Pond, a 14-mile long, 930 acre impoundment on the Androscoggin River created by the Gulf Island Dam three miles south in Auburn. Since the construction of the Gulf Island Dam in 1925, the Androscoggin River's water quality in this area has been somewhat impaired, and the River at times has failed to meet state and federal water quality standards. In the 1960s the Androscoggin River was labeled as one of the ten most polluted rivers in the nation. While passage of the Clean Water Act in 1972 was a landmark turning point for the Androscoggin and other rivers in Maine, some concerns remain regarding oxygen levels in Gulf Island Pond. Phosphorus is one potential problem, as excess phosphorus levels promote algal blooms, which in turn deplete oxygen. Each summer low dissolved oxygen concentrations in Gulf Island Pond may be limiting populations of native fish species, whose presence is important for meeting Maine's water quality standards. Upstream paper mills account for the majority of the oxygen-depleting pollution entering the Pond, with municipal discharges and non-point sources accounting for the remainder.[2]

In recent years, a focus on increasing dissolved oxygen levels and reducing chemical contamination is believed to be improving the water quality. As a result of these improvements, this section of the river is an increasingly popular area for small mouth bass fishing, and it is a productive breeding area for waterfowl. In fact, Gulf Island Pond is the site of one of the most popular bass fishing tournaments in the state.[3] While some point to small-mouth bass populations as a sign of the River's recovery, others note that this non-native species is not a good indicator for the desired water quality.

Approximately five miles of small perennial and intermittent streams drain from the Riverlands into the Androscoggin. All of these streams are small and un-named, except Bradford Brook, a short perennial stream that originates from a ~25 acre shrub swamp on the Turner unit.

Wetlands

According to the National Wetlands Inventory, mapped wetlands on the Riverlands total 310 acres, accounting for just over 11% of the property. Wetlands are divided evenly between forested and non-forested wetland types (Map 4). Based on field assessments, it appears there are additional unmapped marshes along portions of the Androscoggin river shore.

Wetlands on the unit range from floodplain and shoreline emergent marshes to moderate-sized bogs and isolated vernal pools. The largest wetland, a ~100 acre shrub

[2] Maine Department of Environmental Protection, as cited by the Androscoggin River Alliance, http://cleanandroscoggin.org/.

[3] Trust for Public Land, http://www.tpl.org/tier3_cd.cfm?content_item_id=21773&folder_id=259.

swamp in the Turner section, is part of a broad lowland system that drains both into the Androscoggin River to the east and Nezinscot River to the north. The smallest wetlands are forested pockets of hemlock and red maple, less than an acre in size -- some of which likely function as vernal pools for selected wildlife species.

Ecological Processes

The Androscoggin Riverlands have a lengthy history of human occupation and use. The continued growth and succession of forests on former pastures and woodlots are among the dominant ecological processes occurring on the site. Moderate to heavy harvests in the 1970s and 1980s by Diamond Occidental have created a relatively young to mid-aged forest that may mask other natural disturbance patterns such as forest decay and senescence. While some hemlock and oak-pine stands are silviculturally mature (e.g., basal area 100-120 ft/acre , trees in the 10-16" range), there is comparatively little coarse woody debris and few large snags. More recently, small portions of the forest canopy (e.g., hardwood knolls) were moderately damaged in the 1998 ice storm.

Isolated lightning strikes have likely occurred on the unit, though no large-scale fires are known. Small fires, such as those caused by lightening strikes, open up patches of forest that are typically recolonized by fast growing, short lived species such as aspen and paper birch. This patchy disturbance contributes to an uneven and diverse forest canopy.

Beaver activity has been noted along several drainages in the unit. Beavers build dams to create safe access to food sources. Beaver ponds subsequently flood adjoining lowlands, enlarging wetlands and creating new areas for wetland species to colonize (Figure 1). Once the hardwoods within a safe distance of the pond are gone, beavers often abandon their dam and build a new dam in a different location. Over the span of decades, the abandoned ponds typically slowly fill with sediment and transition from marshy wetlands back to forested swamps. By creating and abandoning impoundments along the stream course, beavers create a mosaic of habitats for a variety of plant and wildlife species.

Figure 1: Beaver meadow at south end of Turner unit

Land Use and Harvest History

As noted above, the Androscoggin Riverlands have been used by people for centuries. Prior to European colonization, the Abenaki and Pejebscot tribes likely used the rivershores as seasonal camps. In fact, the name 'Androscoggin' is apparently derived from the Native American term meaning 'plenty of fish" (Maine Times 1971) or "Fish coming in the Spring" (Charles Starbird 1928).[4]

Following European colonization, the lands supported an active mix of logging and farming. In the late 1700s sawmills sprang up in Turner, Leeds, and Greene, and portions of the Androscoggin were dammed for use in lumbering as early as 1800. In fact, in 1770 illegal harvesting of white pines along the shore of the Androscoggin prompted Turner officials to hold a meeting to determine how to safeguard these valuable trees.[5]

The construction of the Gulf Island Dam in 1925 resulted in flooding and abandonment of riverside settlements, and some of land became owned and managed by timber companies, most recently Diamond Occidental. Prior to sale of the lands to the state in the 1990, Diamond managed the area as a working forest. Forest stand type maps from 1987 depict the Riverlands as a mix of pine, hemlock, and mixed hardwood stands. Softwood stands in 1987 were primarily pole-sized (i.e., 6-10 inches in diameter), while many hardwood stands were in the sawlog class (greater than 10 inches in diameter) (Figure 2).

Although the Riverlands are now primarily forested, much evidence of past human use remains. Several old rock foundations are within the parcel, and there are also meandering stone walls and a flooded schoolhouse and cemetery. A hiking trail along the northern shoreline of the Turner unit passes by eight homesteads known from the 1873 Maine Atlas.[6]

Since the state's purchase (initiated in 1990 and continued through 2008), the primary use has been dispersed recreation. There is a fairly extensive network (roughly 10 miles) of trails for both motorized and non-motorized use. Main trails are well marked and receive moderate to heavy use from snowmobiles, ATVs and mountain bikes. Most areas are well-maintained. In the summer of 2008 there were some spots on the Bradley loop with significant mud and erosion problems, but these areas were improved in the fall of 2008. Separate marked hiking trails appear to receive little use based on multiple 2008 visits (Figure 2).

---

[4] From '*The Androscoggin River – An Environmental History'*, slideshow by the Androscoggin River Alliance. 2006.

[5] '*An Environmental History of the Androscoggin River*,' Class project of the Bates College Environmental Studies Department. 1997.

[6] See BPL's Turner Land Recreational and Archeological Features map.

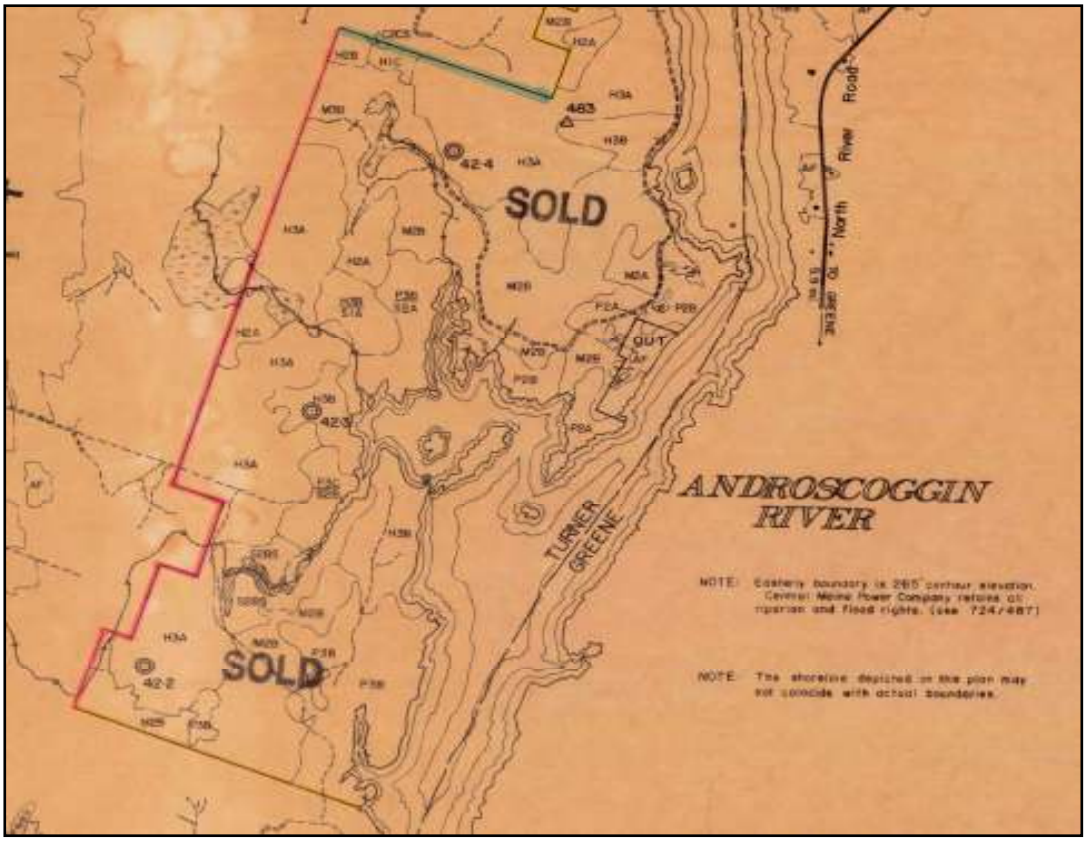


Figure 2: Stand type map from 1987, Diamond Occidental

Figure 3: ATV/snowmobile trails on Leeds unit (left) and overgrown hiking trail in Turner unit (right)

Wildlife and Fisheries

No systematic terrestrial wildlife surveys have been completed on the Riverlands. Based on a combination of wildlife signs noted in the field and presence of habitat, it is likely that the lands support a variety of mammals including moose, snowshoe hare, red fox, coyote, porcupine, and numerous other species common to the region (DeGraaf and Yamasaki 2001). The intact, interior forest conditions likely provide habitat for many birds, including neo-tropical migrants. Common birds noted during 2008 field surveys include black-capped chickadee, black-throated green warbler, black-throated blue warbler, ovenbird, common yellowthroat, yellow warbler, chestnut-sided warbler, black and white warbler, eastern kingbird, red-eyed vireo, American crow and many others. A large snapping turtle and several painted turtles were observed in the emergent marsh adjacent to the Leeds parcel.

According to MDIFW maps, the Riverlands include about 1,100 acres of Deer Wintering Areas, which account for over 40% of the Unit. The mapped Deer Wintering Areas are primarily coincident with lowland and riparian bands of mature white pine (Leeds unit) and well-stocked hemlock (Turner). The wintering areas in the Turner unit receive moderate to heavy deer use.[7]

The Unit also contains 277 acres of Wading Bird and Waterfowl habitat, including both rivershore emergent wetlands and interior marshes. The Turner unit supports at least a half a dozen small, seasonal wetlands that may function as vernal pools. Spotted salamander egg masses were noted in late May of 2008 in one such pool (Figure 4).

The Upper Androscoggin River has been stocked with non-native brown trout and rainbow trout in the past [8,9], though it is not clear how much these cold water species use Gulf Island Pond. As noted previously, the Pond has been the site of a popular bass fishing tournament in recent years.

[7] Personal communication from Joe Wiley, BPL/IFW. January 2009.
[8] *Angling on the Androscoggin*, Staff Report, Blethen Maine Newspapers Inc. 2001.

[9] University of Maine PEARL database; http://www.pearl.maine.edu/LakeInformation.

Figure 4: Possible vernal pool on the Turner Unit

Rare Plant and Animal Species

A healthy population of the **broad beech fern** (*Phegopteris hexagonoptera*), (ranked S2, Special Concern) has been observed at the base of the moderately calcareous outcrops near the western shore of the river (see Figure 5 and fact sheet, Appendix 2). This population, which was originally noted as a small clump of just a few plants in 1997, was verified again in 2008 and now contains over 500 plants. The population occurs along either side of a hiking trail within a few hundred feet of a major motorized trail. (See Figure 6 and fact sheet, Appendix 2).

No rare animals are known from the parcel. However, a bald eagle nest has been documented just south of the property along the Androscoggin River, and eagles frequently use some of the large rivershore white pines for roosting. (Bald eagles have been removed from the federal Threatened List due to the success of recovery efforts, and plans are underway to remove them from the state list in 2009.) As Map 5 indicates, the Scarlet Bluet, a rare damselfly (S2, Special Concern) has been found on a pondshore less than two miles away in Greene, and appropriate habitat may exist within the Unit for this species.

Figure 6: Broad Beech Fern (right)

Natural Communities

As noted previously, forests on the unit have an extensive history of human use, including clearing for agriculture in the 1800s and timber management until the 1980s. Except for scattered open wetlands and recreational trails, the land is now completely forested. Remotely sensed land cover data[10] indicates that most of the cover is mature stands of mixed forest (50%) or evergreen forest (34%), with only 6% mature hardwood cover. The remaining 11% is divided among regenerating forest (4%), forested wetland (2%), roads (2%), shrub-scrub (1%), and open field (1%).

In terms of natural communities, most mixed wood types are classified as **Red Oak – Northern Hardwood – White Pine Forest**, but there is also a patch of **Oak-Pine Forest** grading to a more open **Oak Pine Woodland** on a prominent knoll in the Turner Unit. **Hemlock Forest** is the primary evergreen natural community on the Turner Unit, and **White Pine – Mixed Conifer Forest** predominates on the Leeds Unit.

Most of the hardwood stands on the Riverlands contain a mix of red oak, beech, and red maple, but a few limited areas (~10 acres) on the Turner Unit consist of moderately enriched soils, derived from the Sangerville Formation, that support a **Sugar Maple Forest**. One such area, at the base of the largest hill on the Turner Unit, provides productive growing conditions for sugar maples and multiple large (25"+) white ash trees

[10] Land cover data is from Thematic Mapper (1999-2001), 30 meter resolution, available from MEGIS.

(Figure 8.) On an adjacent band of ledges, outcrops, and steep slopes close to the river is a rare **Ironwood Oak Ash Woodland** (ranked S3) with maidenhair fern (*Adiantum pedatum*), spikenard (*Aralia racemosa*), saxifrage (*Saxifraga virginiensis*), rusty woodsia (*Woodsia ilvensis*) and a number of other rich woods indicator plants, including the rare broad beech fern noted above (Figure 7). This natural community is relatively small (a few acres in a linear pattern) but is intact and representative of this type.

Figures 7 and 8: Maindenhair Fern and large Ash trees in rich woods on the Turner Unit.

Although none of the wetland natural communities are large enough to be considered exemplary, the wetlands on the Riverlands represent a diversity of types and conditions representative of the region. Open wetlands range from shoreline **Pickerelweed Marshes** and **Open Water Marshes** along the Androscoggin River in Leeds to **Grassy Shrub Marshes** in old beaver meadows on the Turner Unit. A few of the wetlands on the Turner Unit have moderate peat accumulations and are classified as various gradations between **Tall Shrub Fen** (dominated by mountain holly and winterberry) and **Sweetgale Fen**. A ~40 acre, partially forested bog along Bradford Brook in the Turner Unit is transitional between **Red Maple Wooded Fen** and **Black Spruce Forested Bog**. At this location, a shallow peatland has formed along a low gradient stream channel, where flow is impeded such that peat can accumulate but where water still flows in and out of the system. A few other areas of poorly drained soils

along stream drainages support **Hardwood Seepage Forests**, each a few acres in size, too small to be considered exemplary.

In summary, one rare natural community (Ironwood Oak Ash Woodland) has been documented by MNAP staff, and no exemplary common natural communities have been identified. While the forest is silviculturally mature (most canopy trees in the 50-100 year old range), no stands exhibited sufficient late-successional structures to merit special management. Given sufficient time to develop, some of the older hemlock stands could become good representative natural communities. At present, the Riverlands' primary ecological values are as undeveloped open space, intact wetlands and vernal pools, riparian buffer along the Androscoggin River and large unfragmented forest habitat.

Management Considerations

- The primary current use of the parcel is for motorized recreation. Many of the ATV/snowmobile trails are well marked and maintained, but some sections of trail on the Turner Unit could have improved drainage and stabilization to prevent further erosion. If necessary, trails could be relocated to avoid sensitive wet areas.

- There are several locations of potential vernal pools. Springtime monitoring of these pools would be helpful to determine their significance for breeding amphibians.

- In a relatively developed part of central Maine, the size and condition of the Riverlands make it especially valuable open space and wildlife habitat. Large habitat blocks are particularly important to species with large home ranges, such as bobcat, bear, and fisher. Large habitat blocks are also likely to include a wider diversity of species compared to smaller blocks. Maintaining its unfragmented character (e.g. not building permanent roads) will help sustain the qualities of this parcel.

- Hiking trails appear to receive little use. However, one such trail bisects the population of broad beech fern. Impacts from the trail should be monitored, and if necessary, the trail should be relocated to avoid degrading the rare plant population.

- Any management activities in or adjacent to the Ironwood Oak Ash Woodland should be planned in consultation with MNAP staff.

References

Androscoggin River Alliance. 2006. 'The Androscoggin River – An Environmental History', slideshow. http://www.cleanandroscoggin.org/.

Bates College Environmental Studies Department. 1997. 'An Environmental History of the Androscoggin River.' Class project.

Blethen Maine Newspapers Inc. 2001. Angling on the Androscoggin, Staff Report.

DeGraaf, Richard and Mariko Yamasaki. 2001. New England Wildlife: habitat, natural history, and distribution. University Press of New England, Hanover, NH.

USDA NRCS Soils Survey Division, http://ortho.ftw.nrcs.usda.gov/cgi-bin/osd/osdname.cgi

University of Maine PEARL database. 2008. http://www.pearl.maine.edu/LakeInformation.

Maine Department of Environmental Protection, as cited by the Androscoggin River Alliance. 2008. http://cleanandroscoggin.org/.

Joe Wiley, BPL/IFW. Personal communication. January 2009.

Trust for Public Land, 2008. 326 Acres Added to Androscoggin Riverlands Park. http://www.tpl.org/tier3_cd.cfm?content_item_id=21773&folder_id=259.

Appendix 1: Rare Plants and Rare Natural Communities of the Androscoggin Riverlands

Feature Name	Location	S-rank/ G-rank	EO-Rank	Last Obs.	Size (ac)
Ironwood Oak Ash Woodland	Cliff base and drainages near River	S3	C	2008	3 acres
Broad beech fern *(Phegopteris hexagonoptera)*	Cliff base and drainages near River	S2/G5	A	2008	~1 acre

Appendix 2: Rare Plant Fact Sheet

Maine Department of Conservation
Natural Areas Program

Rare Plant Fact Sheet

Phegopteris hexagonoptera (Michx.) Fee

Broad Beech Fern

Habitat: Rich, often rocky, hardwood forests. [Hardwood to mixed forest (forest, upland)]

Range: Quebec and Maine to Ontario and Minnesota, south to northern Florida and Texas.

Phenology: Fruits in August.

Family: Polypodiaceae

Illustration from Britton & Brown's Illustrated Flora of the Northern United States and Canada, 2nd ed.

Aids to Identification: Broad beech fern is a large fern with triangular blades, which grows to about 60 cm in height. It is pubescent with transparent, needle-like hairs and has narrow, light colored scales. Most similar looking ferns are scaley rather than hairy. It is slightly hairy, and a dull green color. It is distinguished from its close relative long beech fern (*Phegopteris connectilis*) by the entirely winged axis and subleaflets with distinct lobes.

Ecological characteristics: Generally found in sunny, more open spots in moist woods.

Synonyms: Formerly known as *Dryopteris hexagonoptera* or *Thelypteris hexagonoptera*.

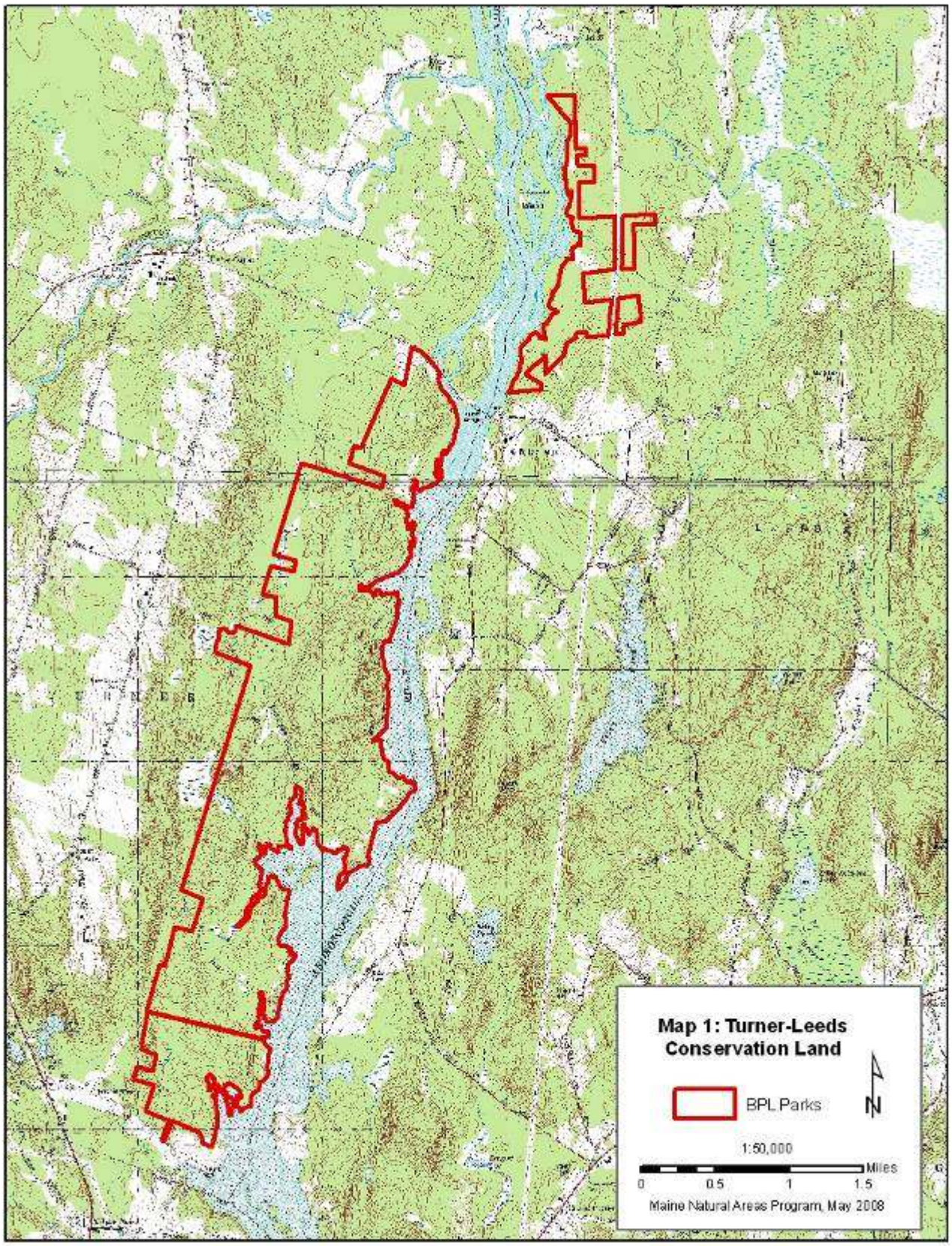
Rarity of *Phegopteris hexagonoptera*

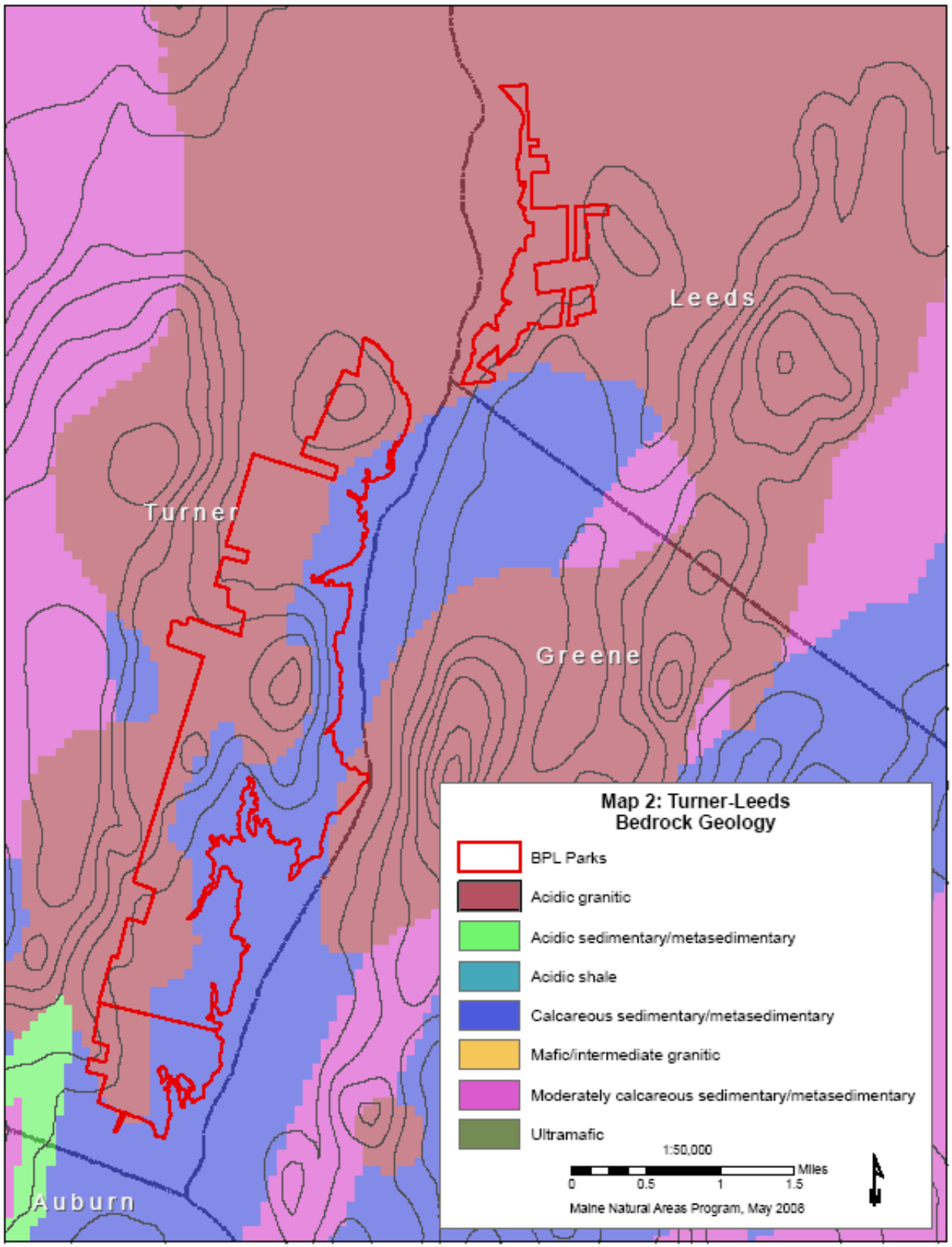
State Rank:	S2	Imperiled in Maine because of rarity or vulnerability to further decline.
New England Rank:	None	
Global Rank:	G5	Demonstrably widespread, abundant, and secure globally.

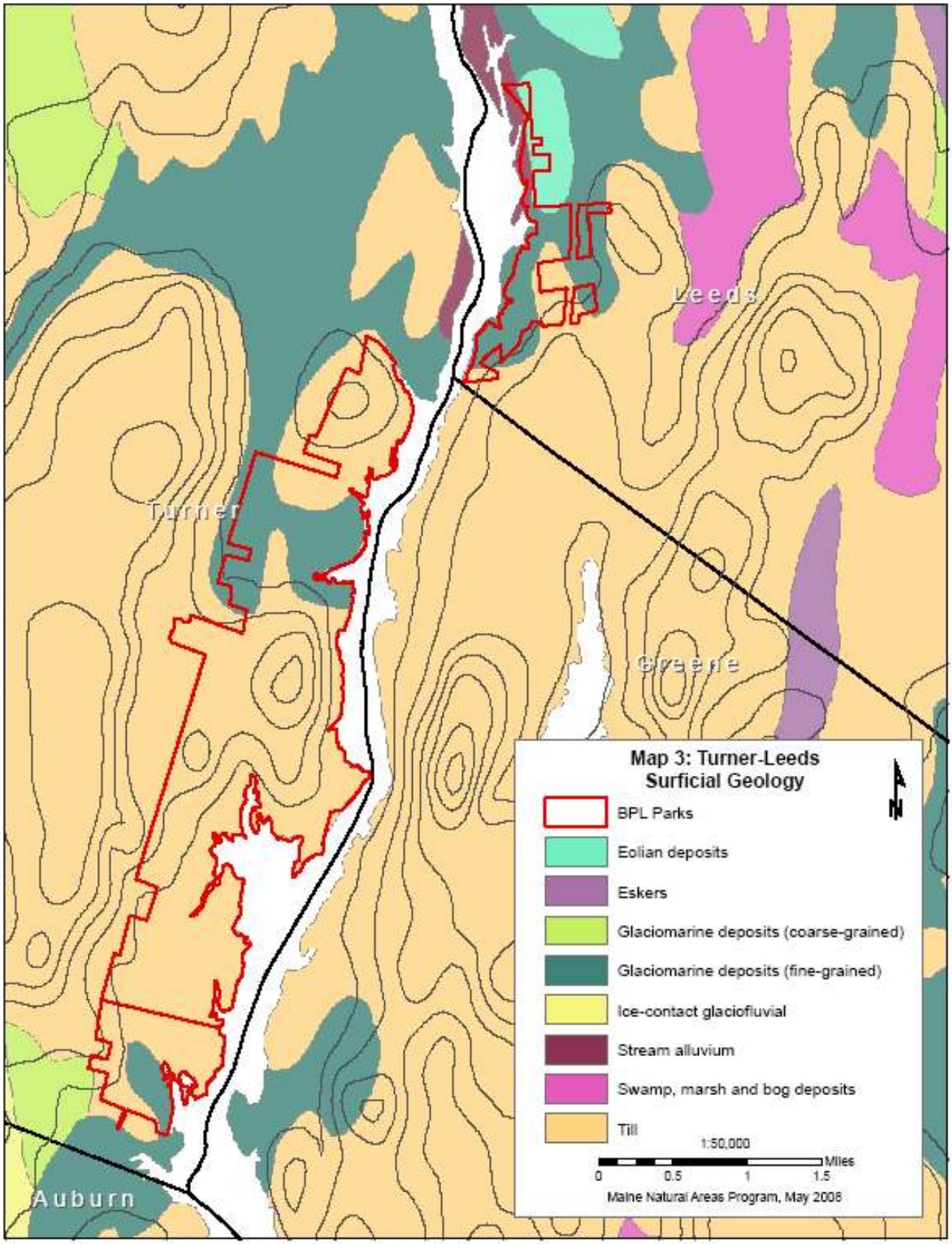
Status of *Phegopteris hexagonoptera*

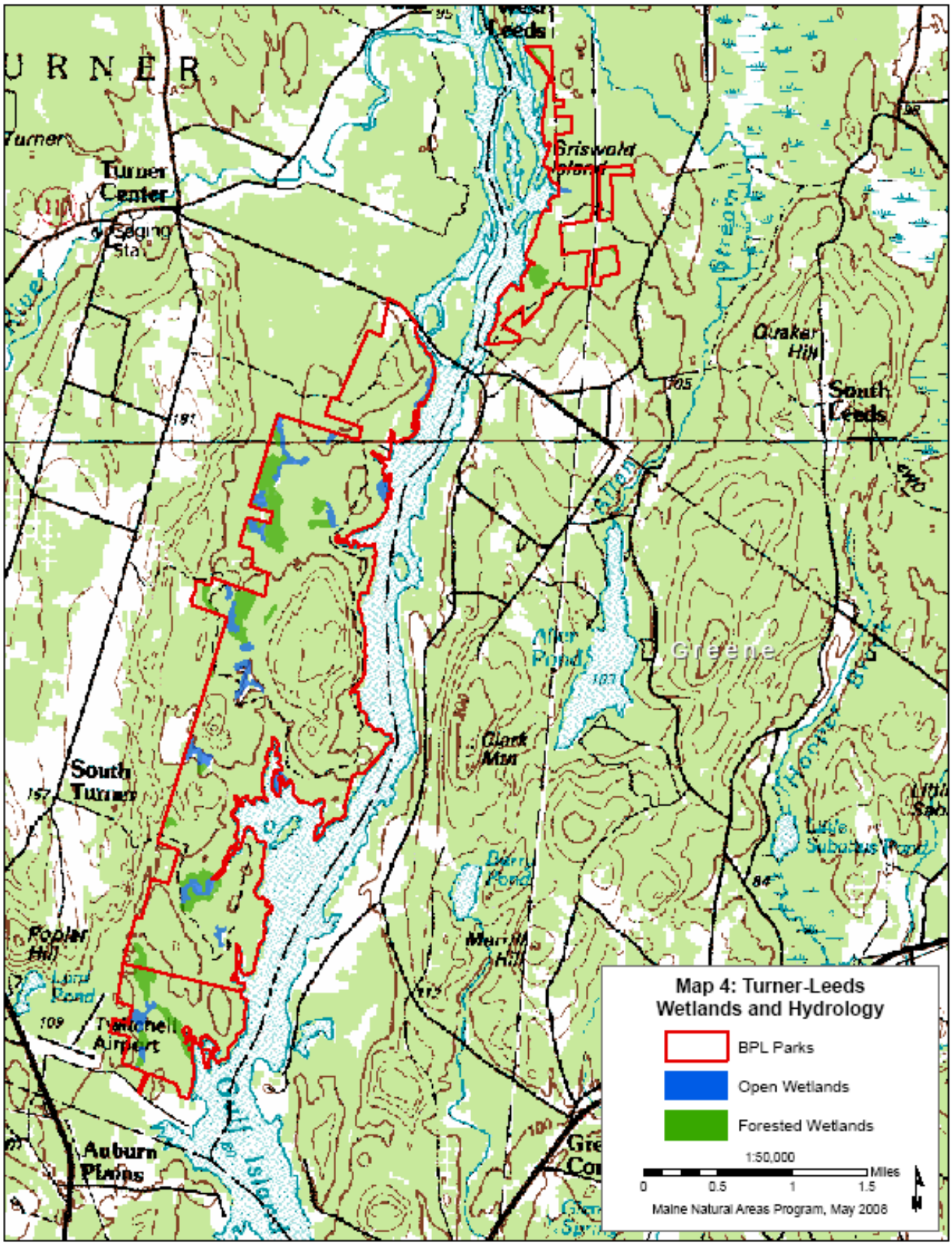
Federal Status:	None	No Federal Status.
State Status:	Special Concern	
Proposed State Status:	Special Concern	Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.

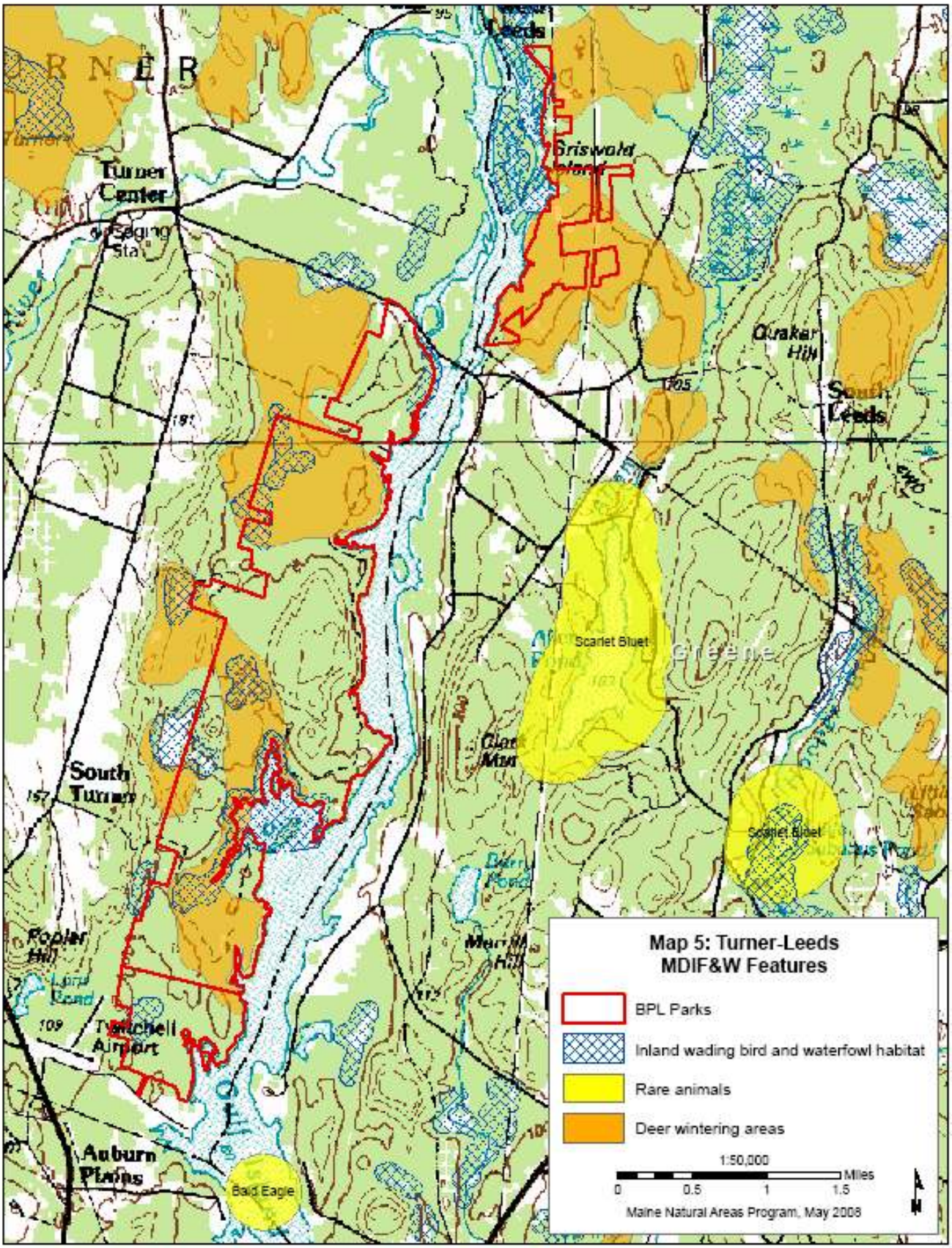
Appendix 3: Maps of the Androscoggin Riverlands Unit

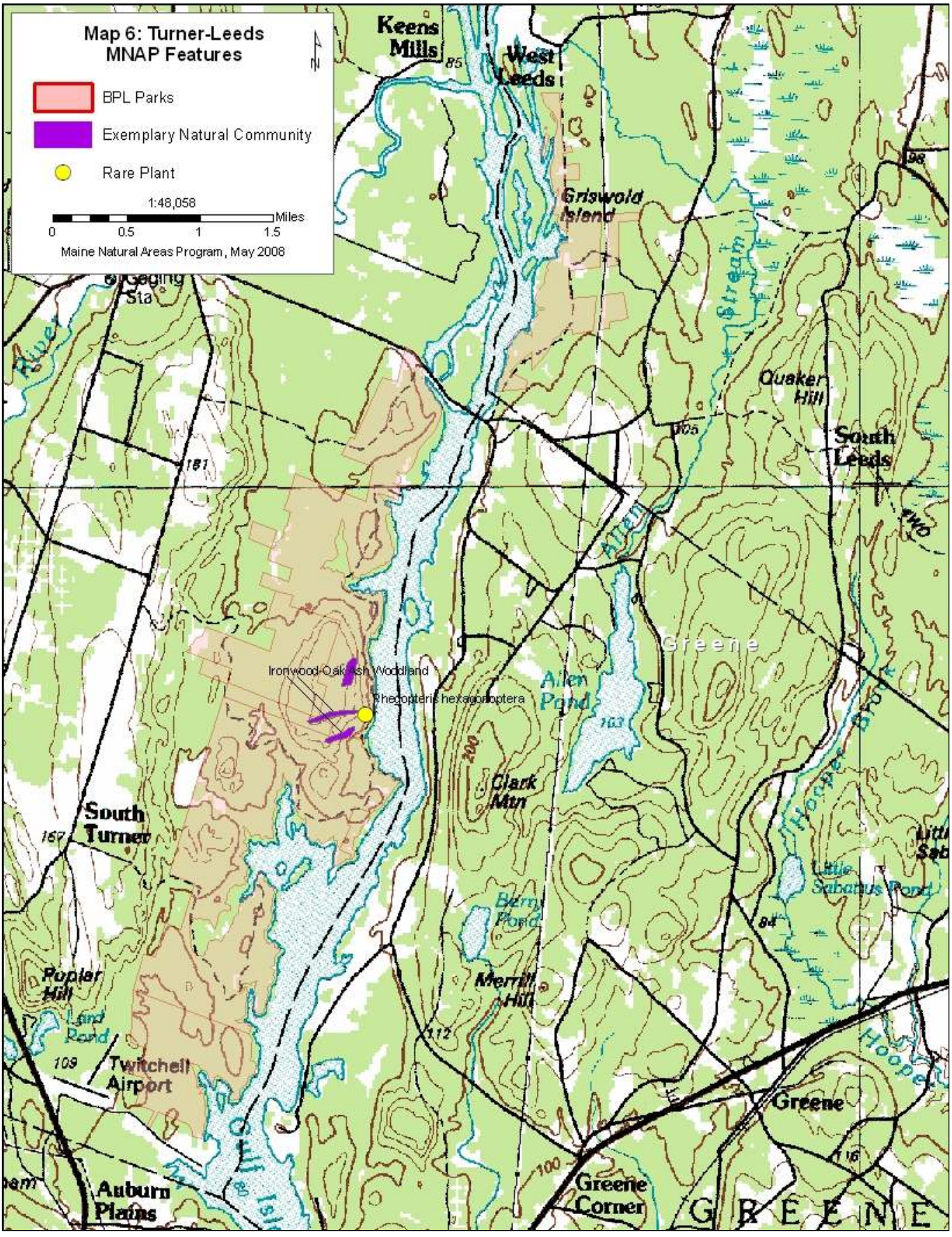

Map 1: Turner-Leeds
Conservation Land
BPL Parks
N
1:60,000
Miles
0
0.5
1
1.5
Maine Natural Areas Program, May 2008


Leeds
Turner
Greene
Auburn
Map 2: Turner-Leeds
Bedrock Geology
BPL Parks
Acidic granitic
Acidic sedimentary/metasedimentary
Acidic shale
Calcareous sedimentary/metasedimentary
Mafic/intermediate granitic
Moderately calcareous sedimentary/metasedimentary
Ultramafic
1:50,000
Miles
0
0.5
1
1.5
Maine Natural Areas Program, May 2008


Leeds
Turner
Greene
Auburn
Map 3: Turner-Leeds
Surficial Geology
N
BPL Parks
Eolian deposits
Eskers
Glaciomarine deposits (coarse-grained)
Glaciomarine deposits (fine-grained)
Ice-contact glaciofluvial
Stream alluvium
Swamp, marsh and bog deposits
Till
1:50,000
Miles
0
0.5
1
1.5
Maine Natural Areas Program, May 2006


Map 4: Turner-Leeds
Wetlands and Hydrology
BPL Parks
Open Wetlands
Forested Wetlands
1:50,000
0
0.5
1
1.5
Miles
Maine Natural Areas Program, May 2008
Turner Center
Griswold Island
Quaker Hill
South Leeds
Greene
Clark Mtn
South Turner
Poplar Hill
Auburn Plains


Leeds
Turner Center
Griswold Island
Quaker Hill
South Leeds
Scarlet Bluet
Scarlet Bluet
Greene
Clark Mtn
South Turner
Poplar Hill
Lord Pond
Twitchell Airport
Auburn Plains
Bald Eagle
Map 5: Turner-Leeds
MDIF&W Features
BPL Parks
Inland wading bird and waterfowl habitat
Rare animals
Deer wintering areas
1:50,000
Miles
0
0.5
1
1.5
Maine Natural Areas Program, May 2008


Map 6: Turner-Leeds
MNAP Features
BPL Parks
Exemplary Natural Community
Rare Plant
1:48,058
Miles
0
0.5
1
1.5
Maine Natural Areas Program, May 2008
Keens Mills
West Leeds
Griswold Island
Quaker Hill
South Leeds
Ironwood-Oak-Ash Woodland
Phegopteris hexagonoptera
Allen Pond
Clark Mtn
South Turner
Poplar Hill
Twitchell Airport
Merrill Hill
Little Sabattus Pond
Greene
Greene Corner
Auburn Plains
GREENE